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# The Value of Services Provided by the Stock of Consumer Durables, 1947-77: An Opportunity Cost Measure

PURCHASES of consumer durables are included in personal consumption expenditures in the national income and product accounts (NIPA's). Treatment as consumption implies that these durables are used up in the period in which they are purchased rather than providing services over several periods. In this study, recognition is taken of these services and estimates of their value are provided for 1947–77, in current and constant dollars and by type of durable.

The services provided by producer durables are already recognized in the NIPA's. On the income side of the national income and product account, the services of producer durables are measured by the returns to the capital represented by the durables (profits and interest), indirect business taxes on the services these durables provide, and the depreciation of the stock of these durables. On the product side, the sum of these items is reflected in the value of the output that is produced with the aid of producer durables. The estimates presented in this study would make it possible for those who desire to do so to include the services of consumer durables in NIPA measures of output. On the product side of the national income and product account, these services would be included in personal consumption expenditures, and purchases of durables would become a form of investment. Changes consistent with those on the product side—the addition of measures of the returns to capital, indirect business taxes, and depreciation—would be made on the income side of the account. (Changes made in the national income and product account would, of course, call for matching counterentries in the other accounts.)

This study first discusses alternative approaches to the measurement of service value. There are two general approaches, one based on observed market rents and the other on the principle of opportunity cost. The opportunity cost approach—and among its variants the one for which estimates can most readily be prepared—is selected for implementation. For that variant, the study reviews the decisions made in specifying it, describes the sources and methods used in preparing the estimates, and introduces the estimates. (Work is underway to test the feasibility of implementing other measures.)

## Alternative Approaches to the Measurement of Service Value

There are two general approaches to the measurement of the value of services of consumer durables. In the first approach, which will be explained below by reference to the measurement of the services of owner-occupied housing in the NIPA's, the value of these services is based on the observed market rent for the durable and a net return is obtained by subtracting the actual costs of ownership from the value of the services. In the second approach, the net return is estimated as an opportunity cost, i.e., the return from alternatives to owning the durable that are forgone by the owner. Actual costs of ownership are added to the net return to obtain the service value. These two approaches are discussed in turn.[1]

### *The observed market rent approach*

The observed market rent approach underlies the measurement of the services of owner-occupied housing in the NIPA's, and the suggestion is often made that a similar approach be used for consumer durables. For owner-occupied housing, the space rent that could be earned if an owner-occupied house were rented is first obtained on the basis of data on rent paid for similar rented properties. Second, the following major categories of ownership costs are deducted: repairs and maintenance, mortgage interest, property taxes, and depreciation. The residual is the measure of net rent.

The space rent may be interpreted in two ways. First, it represents the rental price of the dwelling that a renter has to pay to rent a comparable dwelling and that an owner-occupant could obtain by renting out the dwelling. Second, it generally represents a lower bound of the value of the dwelling's services to the owner, as evidenced by the fact that the owner could have obtained the market rent but chose instead to consume the services of the dwelling. However, be-

NOTE.—This study is the first published result of a recently initiated BEA program to prepare measures related to economic well-being in the framework of the national income and product accounts. In addition to work on services of consumer durables, this program includes work on services of government capital, accumulation and stocks of human capital, use and value of household nonmarket time, and health and safety in the workplace. This article was prepared under the general supervision of John E. Cremeans.

1. There are two other—but seldom used—approaches to the measurement of service value: (1) cost of a substitute service, and (2) cash-equivalent value. The former uses the market price of a substitute for the durable's services (e.g., laundromat costs could be used to value the services of a washer and dryer in one's home). The latter is the minimum cash compensation that would be required for the consumer voluntarily to forego the durable's services. This approach is based on "equivalent variation" as defined by J. R. Hicks and is discussed in Gershon Cooper and Arnold J. Katz: *The Cash Equivalent of In-Kind Income* (Springfield, Va., National Technical Information Services, April 1975), Accession No. PB 276-767.

**Table 1.—Synopsis of Methodology for the Estimation of Current-Dollar Service Value of Consumer Durables**

| Component | Methods | Sources |
|---|---|---|
| Net return: | | |
| Net stock | | John C. Musgrave, "Durable Goods Owned by Consumers in the United States," SURVEY, March 1979. |
| Rate of return before tax: | | |
| Autos | Weighted average of rates: $vR_v + wR_w + xR_x$ | |
| | Weights: proportions of net stock of autos (see table 2). | |
| | v: Outstanding "new auto" debt | Primarily from Survey of Consumer Finances, Survey Research Center, University of Michigan and Federal Reserve Board; and various releases by Federal Reserve Board. |
| | w: Autos held by owners with no personal debt | Survey of Consumer Finances, Survey Research Center, University of Michigan and Federal Reserve Board; Consumer Expenditure Survey, Bureau of Labor Statistics; and 1977 Consumer Credit Survey, Federal Reserve Board. |
| | x: Residual. | |
| | Rates on: | |
| | $R_v$: Outstanding "new auto" debt—weighted (by average maturity of "new auto" loans) average of past rates on borrowings at commercial banks and finance companies on autos last purchased when new. | Rates: Robert P. Shay, *New-Automobile Finance Rates, 1924–62* (New York: National Bureau of Economic Research, 1963) and Federal Reserve Board. Weights: see sources for v above. |
| | $R_x$: Financial assets: weighted (by holdings of households, personal trusts, and nonprofit organizations) average of yields on time and savings deposits at commercial banks; time and savings deposits at savings and loan associations; Series E savings bonds; 90-day Treasury bills; 3–5 year Treasury notes; long-term Treasury bonds; a composite of State and local bonds; a composite of corporate bonds; corporate equities; mortgages held by individuals; and 4–6 month commercial paper. Yields on corporate equities are a 10-year moving average of the sum of dividends and revaluations divided by market value at the beginning of the year. | Yields: Primarily from Federal Reserve Board, Federal Deposit Insurance Corporation, and Federal Home Loan Bank Board. Weights: Flow of Funds, Federal Reserve Board. |
| | $R_p$: Other personal debt: Interest paid on total consumer debt less interest paid on "new auto" debt divided by total outstanding consumer debt less outstanding "new auto" debt. | Bureau of Economic Analysis, and sources for v above. |
| Other durables | Weighted average of rates: $yR_y + zR_z$ | |
| | Weights: proportions of net stock of other durables (see table 2). | |
| | y: Other durables held by owners with no personal debt | See sources for w above. |
| | z: Residual. | |
| | Rates on: | |
| | $R_y$: See above | See sources of $R_x$ above. |
| | $R_z$: See above | See sources for $R_p$ above. |
| Depreciation | | John C. Musgrave, "Durable Goods Owned by Consumers in the United States," SURVEY, March 1979. |
| Repairs and maintenance | For 1972, estimates were prepared by type of durable. For other years, 1972 estimates were extrapolated by components of personal consumption expenditures that best reflect changes in repairs and maintenance for the type of durable. The split for motor vehicles between autos and other is in the ratio of 0.88 to 0.12, the ratio used in the stock estimates to allocate nonreplacement parts. Repair and maintenance expenditures are treated as costs in the year in which they are made and are not spread over the service lives of the repairs. | For 1972, Bureau of Economic Analysis. For other years, NIPA table 2.6. |
| Personal property taxes | Assumed to be levied only on motor vehicles. Split between autos and others in ratio of 0.88 to 0.12 (see repairs and maintenance). | NIPA table 3.4. |

**Table 2.—Weights Used to Calculate Rates of Return, Selected Years**

[Percent]

| Year | Autos | | | Other durables | |
|---|---|---|---|---|---|
| | "New auto" debt | Financial assets | Other personal debt | Financial assets | Other personal debt |
| 1947 | 0.09 | 0.56 | 0.35 | 0.59 | 0.41 |
| 1958 | .15 | .36 | .48 | .36 | .64 |
| 1966 | .25 | .33 | .42 | .33 | .67 |
| 1977 | .20 | .29 | .49 | .32 | .66 |

**Table 3.—Effective Marginal Income Tax Rates Applied to Rates on Financial Assets and Debt, Selected Years**

[Percent]

| Year | Financial assets | Debt |
|---|---|---|
| 1947 | 0.11 | 0.04 |
| 1958 | .12 | .10 |
| 1966 | .15 | .13 |
| 1977 | .23 | .14 |

**Table 4.—Service Value in Current and Constant Dollars, Selected Years**

| Year | Billions of dollars | Billions of 1972 dollars |
|---|---|---|
| 1947 | 20.0 | 35.8 |
| 1958 | 65.5 | 72.3 |
| 1966 | 84.9 | 90.5 |
| 1977 | 228.1 | 192.7 |
| | Average annual percent change | |
| 1947–58 | 11.0 | 6.3 |
| 1958–66 | 3.3 | 4.1 |
| 1966–77 | 9.3 | 6.2 |
| 1947–77 | 8.5 | 5.7 |

NOTE.—See tables 9 and 11.

cause rent obtained by renting out a dwelling is taxed and the value of the services the owner-occupant obtains from the dwelling is not taxed, he may choose to consume the services even while valuing them at somewhat below the market rental price; in these circumstances, the market rental price is not the lower bound.

The implementation of the observed market rent approach is difficult even for owner-occupied dwellings, because the services provided by rental and by owner-occupied dwellings are not fully comparable. These difficulties are even larger if an attempt is made to apply this approach to consumer durables. Fully comparable markets, if they can be found at all, are very small and—like small samples—do not provide a reliable basis for estimation. The markets that can be found do not deal in comparable services. For instance, television rentals often cover not only the use of the television but also delivery and repair services, and are often for a few days or weeks rather than for longer periods. Also, the preferences revealed in rental markets for durables are generally those of transactors other than owner-users.

*The owner cost approach*

In the second general approach, the costs incurred by the owner of the durable, including the net return, are summed. These costs provide a lower bound to the value of the services of durables to the owner, just as do measures based on observed market rent. Among costs incurred, depreciation is always included. In some formulations, expected capital losses are added and expected capital gains are deducted to derive service value. Operating costs are sometimes included. If operating costs, such as repairs and maintenance, are not included, they must be added to the other costs to obtain a measure of service value that can be interpreted as the lower bound of the value of the services of the durable to the owner.[2]

The owner-cost approach has two variants. The variant for which estimates will be presented in this study will be called the "opportunity cost" variant. Although a net return based on opportunity cost is also part of the other variant, that variant will be called "user cost."

In the opportunity cost variant, a rate of return is applied to the average value of the net stock to derive a net return, and depreciation is added.[3] The rate of return, which is intended to measure the productivity of capital, reflects the property income that the owner of a durable could have obtained/retained on the funds tied up in the durable—hence the name "opportunity cost." The net stock is derived by deducting accumulated depreciation from accumulated gross investment. This variant may be expressed in the following form:

$$C_{s,t}=\frac{r_t(P_{s,t}+P_{s+1,t+1})}{2}+D_{s,t}+O_{s,t}$$

where $C_{s,t}$ is the service value of an $s$ year old durable in year $t$, $r_t$ is the average rate of return in year $t$, $P_{s,t}$ is the purchase price of an $s$ year old durable at the beginning of year $t$, $D_{s,t}$ is depreciation on an $s$ year old durable in year $t$, and $O_{s,t}$ are operating costs associated with an $s$ year old durable in year $t$.

The second variant—user cost—differs from the first variant primarily in that it includes capital gains and losses on the durables. In the literature, this variant is generally formulated in terms of expected values because it is based on the principle that the purchase price of the durable equals the discounted present value of its expected future benefits.[4] The expected annual service value equals the expected net return on the funds tied up plus the expected decline in the market value of the durable during the year.

2. Repairs and maintenance are now included in personal consumption expenditures (PCE) in the NIPA's. If the service value of consumer durables were to be added to NIPA measures of output, repairs and maintenance would have to be omitted from PCE or from estimates of service value to avoid double-counting.

3. Estimates of this type can be found in Robert Eisner, "Total Incomes in the United States, 1929 and 1969," *Review of Income and Wealth*, March 1978, pp. 41–70; and John W. Kendrick, *The Formation and Stocks of Total Capital* (New York: Columbia University Press for the National Bureau of Economic Research, 1976).

4. See Laurits R. Christensen and Dale W. Jorgenson, "Measuring Economic Performance in the Private Sector," in ed., Milton Moss, *The Measurement of Economic and Social Performance*, Studies in Income and Wealth (New York: Columbia University Press for the National Bureau of Economic Research, 1973); Robert E. Hall, "Technical Change and Capital From the Point of View of the Dual," *Review of Economic Studies*, January 1968, pp. 35–46; Charles R. Hulten and Frank C. Wykoff, "Economic Depreciation and The Taxation of Structures in United States Manufacturing Industries: An Empirical Analysis," in ed., Dan Usher, *The Measurement of Capital*, Studies in Income and Wealth (Chicago: University of Chicago Press for the National Bureau of Economic Research, 1980); Terry R. Johnson, "Aggregation and the Demand for New and Used Automobiles," *Review of Economic Studies*, June 1977, pp. 311–27; Wolfhard Ramm, "Measuring the Services of Household Durables: The Case of Automobiles," American Statistical Association, *1970 Proceedings of the Business and Economics Section*, 1971, pp. 149–58; and Frank C. Wykoff, "A User Cost Approach to New Automobile Purchases," *Review of Economic Studies*, July 1973, pp. 377–90.

Although formulated in terms of expected values, user cost studies in practice often employ realized values by assuming perfect foresight.

This variant may be expressed in the following form:

$$O^e_{s,t}=r^e_t P_{s,t}+(P_{s,t}-P^e_{s+1,t+1})$$

where $O^e_{s,t}$ is the expected service value of an $s$ year old durable in year $t$, $r^e_t$ is the expected rate of return in year $t$, and $P^e_{s+1,t+1}$ is the expected purchase price of this durable at the beginning of year $t+1$ when the asset is $s+1$ years old. The formula is based on the simplifying assumption that the value of the durable's services in any year is received at the end of the year, and, in conformance with the usual presentation of user costs, does not include operating costs.

The expected decline in purchase price may be partitioned into expected depreciation and expected capital losses. The depreciation component measures the decline in market value as the durable is used up. The capital loss (gain) component represents the change in the price of the asset due to changes in price levels. Expected capital gains reduce the estimated service value; expected capital losses raise it.

Implementation of the user cost variant for consumer durables requires assumptions regarding the formation of consumer price expectations; further theoretical and empirical research is needed to formulate these assumptions. This and other research necessary to develop user cost measures is underway at BEA.

## Specification of the Opportunity Cost Variant

This section will discuss the major problems that arise in specifying the opportunity cost variant and how these problems were handled in preparing the estimates presented in this study. Problems relating to the estimation of depreciation and rates of return will be discussed in turn. Valuation is an aspect of both depreciation and rates of return, but, because it is a more general problem, it will be discussed separately.

### *Depreciation*

There are two aspects of depreciation that must be dealt with: service life and depreciation formula. The estimation of service lives and selection of a depreciation formula are difficult in a dynamic economy where account must be taken not only of wear and tear but also obsolescence. Underlying the capital stock estimates used in this study are average service lives that are constant over the period for each type of durable and range from 3 to 14 years (most between 8 and 11 years) for different types of durables, with a dispersion of discards around the average. The straight-line depreciation formula is used.[5]

**Table 5.—Service Value, by Component, Selected Years**

| Year | Total | Net return | Depreciation | Repairs and maintenance | Personal property taxes |
|---|---|---|---|---|---|
| | Billions of dollars | | | | |
| 1947 | 80.9 | 5.7 | 11.6 | 3.4 | 0.3 |
| 1958 | 65.5 | 56.7 | 33.5 | 7.6 | .3 |
| 1966 | 84.9 | 27.4 | 44.9 | 11.7 | .7 |
| 1977 | 226.1 | 68.0 | 128.0 | 26.4 | 1.7 |
| | Average annual percent change | | | | |
| 1947–58 | 11.0 | 14.2 | 10.1 | 6.9 | 5.3 |
| 1958–66 | 3.3 | 1.4 | 3.7 | 5.5 | 10.9 |
| 1966–77 | 9.3 | 7.3 | 10.0 | 10.9 | 8.3 |
| 1947–77 | 8.3 | 8.2 | 8.3 | 8.2 | 7.9 |
| | Percent distribution | | | | |
| 1947 | 100.0 | 27.4 | 55.8 | 16.2 | .8 |
| 1958 | 100.0 | 37.7 | 51.1 | 10.7 | .5 |
| 1966 | 100.0 | 32.6 | 52.9 | 13.7 | .8 |
| 1977 | 100.0 | 26.5 | 56.6 | 16.1 | .7 |

NOTE.—See table 9.

**Table 6.—Percent Distribution of Service Value, by Type of Durable, Selected Years**

[Percent]

| Year | Total | Autos | Other motor vehicles | Furniture and household equipment | Other |
|---|---|---|---|---|---|
| | Current dollars | | | | |
| 1947 | 100.0 | 30.6 | 2.8 | 50.0 | 18.7 |
| 1958 | 100.0 | 42.5 | 2.7 | 42.7 | 12.1 |
| 1966 | 100.0 | 42.5 | 3.3 | 40.5 | 13.4 |
| 1977 | 100.0 | 41.7 | 6.0 | 38.6 | 13.7 |
| | Constant (1972) dollars | | | | |
| 1947 | 100.0 | 37.5 | 1.5 | 46.5 | 14.4 |
| 1958 | 100.0 | 48.1 | 2.5 | 41.2 | 13.2 |
| 1966 | 100.0 | 44.2 | 2.6 | 39.7 | 13.5 |
| 1977 | 100.0 | 48.7 | 6.5 | 28.1 | 13.8 |

NOTE.—See tables 10 and 11.

### *Rate of return*

As noted earlier, consumer durables provide services over several periods, and these services consist of two main elements: depreciation, which reflects the using up of the durable, and a return that is additional to it, which reflects the productivity of capital. This return cannot be observed directly. Accordingly, in this study an estimate is made by reference to the rate of return that the owner of a durable could have obtained/retained on the funds tied up in the durable. Two aspects of the rate must be dealt with: its component rates and its before- or after-tax basis.

*Component rates.*—Durables may be financed by borrowing funds or by using own funds, and the opportunity cost principle can be formulated in a way that utilizes this distinction. For the credit-financed portion of the net stock, the opportunity forgone is taken to be the reduction of these borrowings, and the average rate at which the borrowing is done is the obvious choice for the component rate. For the portion that is financed from own funds, the choice is less obvious. However, in the usual interpretation of the opportunity cost principle, the rate forgone is the highest that can realistically be earned. For owners of durables with some personal debt, a reduction in that debt generally yields a higher return than an investment in financial assets, and represents the highest rate forgone. For owners of durables with no personal debt, the opportunity forgone is the placement of funds in financial assets. Ideally, the rate for durables purchased with own funds should be each owner's rate on personal debt or financial assets weighted by the own-funds portion of the durable held by that owner.

Data are not available to implement fully this specification. First, the credit-financed portion of the net stock of durables other than autos last purchased when new, and borrowing rates paid on this portion, cannot be identified.[6]

5. See John C. Musgrave, "Durable Goods Owned by Consumers in the United States, 1925–77," SURVEY OF CURRENT BUSINESS, March 1979.

6. Because the credit-financed portion of the net stock of durables cannot be identified, the net return is a return on both the credit-financed and own-funds portions. In contrast, for owner-occupied housing, the net return—that is, net rental income—is a return only to the own-funds portion; the return on the credit-financed portion, which is measured by mortgage interest paid, is part of net interest.

Table 7.—Service Value, Net Return, and Rates of Return Based on Before-Tax and After-Tax Forgone Rates of Return, Selected Years

| Year | After-tax rates of return | | | | Before-tax rates of return | | | |
|---|---|---|---|---|---|---|---|---|
| | Service value | Net return | Rates of return | | Service value | Net return | Rates of return | |
| | | | Autos | Other durables | | | Autos | Other durables |
| | Billions of dollars | | Percent | | Billions of dollars | | Percent | |
| 1947 | 39.9 | 5.7 | 9.3 | 9.5 | 21.2 | 5.1 | 9.9 | 10.1 |
| 1958 | 65.5 | 24.7 | 13.3 | 14.2 | 48.5 | 27.7 | 14.9 | 15.9 |
| 1968 | 84.9 | 27.8 | 10.6 | 11.7 | 59.9 | 31.8 | 12.2 | 13.5 |
| 1977 | 236.1 | 40.0 | 8.5 | 8.6 | 237.1 | 71.1 | 10.5 | 10.8 |

NOTE.—See tables 9 and 12.

Second, data for each owner's stock of durables, type of assets, and debt outstanding are not available. An approximation is made by classifying the net stock of consumer durables into three categories: (1) the stock owned by consumers with no personal debt, (2) the debt portion of the stock of autos last purchased when new ("new auto" debt), and (3) the remainder of the stock, which represents that held by persons with some personal debt other than "new auto" debt. (Personal debt excludes mortgage debt.)

For the first category, the rate is an average yield on a weighted portfolio of financial assets.[7] For the second, the interest rate paid on outstanding "new auto" debt is used. For the third, the rate is the average rate paid on other personal debt. These procedures are discussed in more detail in the section on methodology.

*Before- or after-tax basis.*—Taxation must be considered in specifying rates of return because returns to durables are not taxed but taxes affect returns to forgone opportunities: (1) The effective rate on borrowing is less than the before-tax rate, because taxpayers who itemize deductions may deduct interest paid to derive taxable income and thus reduce income tax liability, and (2) the effective rate on property income is less than the before-tax rate because this income is generally taxed. Thus, because the returns that are forgone when a durable is purchased are after tax it is after-tax rates that should be used in implementing the opportunity cost principle.[8] Estimates of total service value and net return using before-tax forgone rates of return are presented in this study to supplement the after-tax estimates.

### *Valuation*

In principle, three methods of valuation are available. In what may be called historical-cost valuation, durables, and hence depreciation on them, are valued at their prices in the year of their purchase, and rates on borrowing and on financial assets are those effective in that year. In what may be called current-cost valuation, the durables are valued at the prices of each given year and rates are those effective in that year. In what may be called constant-cost valuation, the durables are valued at the prices of a base year and rates are those effective in that year.

The first method uses the prices and rates of return faced by owners when they chose to purchase the durables, and can be rationalized on the ground that no other choice with respect to those durables is open to them in subsequent years. Estimates based on this method reflect a mixture of prices and rates of return of different years, and for this reason are especially difficult to interpret. The second method uses the prices and rates of return faced by the owner in each year. This method is appropriate for a durable for which there is a resale market. This method can be extended, however, to durables for which there is no resale market if it is assumed that purchasers in each year are representative of the owners of the stock of durables. Estimates of current-cost, or current-dollar, service values are presented in this study, and are supplemented by estimates based on historical-cost valuation.

Constant-cost estimates are especially pertinent to welfare-oriented analysis. Estimates that are approximations of constant-cost service value, and that are called constant-dollar service value, are also presented. Because observable prices and physical units do not underlie service value, fully satisfactory con-

7. A similar methodology was used in John V. Krutilla and Otto Eckstein, *Multiple Purpose River Development* (Baltimore: John Hopkins University Press, 1958) to estimate a rate of consumers' time preference for use in cost-benefit studies. Rates of return on consumer durables were estimated by Kendrick (*Total Capital*) using an average rate on financial assets for the owns-funds portion of the net stock and an average rate paid on borrowings for the credit-financed portion, and by Eisner ("Total Incomes") using a borrowing rate for the net stock.

8. Eisner and Kendrick ("Total Incomes" and *Total Capital*) prepared estimates using before-tax forgone rates of return.

Table 8.—Service Value for Furniture and Household Equipment and for Other Consumer Durables Based on Historical-Cost and Current-Cost Valuations, Selected Years

[Billions of dollars]

| Year | Furniture and household equipment | | | Other consumer durables | | |
|---|---|---|---|---|---|---|
| | Service value | Net return | Depreciation | Service value | Net return | Depreciation |
| | Historical-cost valuation | | | | | |
| 1958 | 25.9 | 11.0 | 13.8 | 7.4 | 2.9 | 4.2 |
| 1968 | 36.0 | 14.8 | 19.4 | 11.4 | 4.4 | 6.6 |
| 1977 | 77.7 | 27.7 | 46.3 | 27.4 | 9.1 | 18.0 |
| | Current-cost valuation | | | | | |
| 1958 | 28.0 | 12.4 | 14.5 | 7.9 | 3.3 | 4.4 |
| 1968 | 34.7 | 13.7 | 19.3 | 11.4 | 4.1 | 6.9 |
| 1977 | 87.4 | 28.8 | 58.1 | 30.9 | 9.5 | 20.4 |

NOTE.—See tables 16 and 18. Estimates for years prior to 1967 are not shown because comparable rate of return data are not available for years prior to 1947; use of the Winfrey distribution in estimating stocks of durables requires rates of return for as early as 1916 in order to estimate services for 1947. Motor vehicles are not shown because they are assumed to have a resale market (see text).

stant-dollar estimates cannot be prepared. (See the section on methodology which follows.)

## Methodology

The sources and methods underlying the estimates of the current-dollar service value of consumer durables based on before-tax rates of return on forgone opportunities are presented in table 1. As shown in the table, four components of service value are estimated separately. (1) The net return is estimated as the product of the average value of the net stock and before-tax rates of return. The stock estimates used are BEA's annual estimates prepared by the perpetual inventory method, which uses expenditure flows from the NIPA's. Rates of return are estimated separately for autos and other durables, using weighted average rates on debt and financial assets. (2) The depreciation estimates used are part of BEA's stock estimates. (3) The repair and maintenance component is estimated for 1972 using information from a variety of sources, and extrapolated for other years. (4) Personal property taxes are assumed to be levied only on motor vehicles.

Before-tax rates of return are converted into after-tax rates as follows. For the rate of return on financial assets, an average effective marginal tax rate (MTR) for the Federal income tax is estimated by weighting the effective MTR in each income decile (based on Internal Revenue Service *Statistics of Income*) by the proportion of all consumer durables purchased by each income decile (based on the Bureau of Labor Statistics Consumer Expenditure Survey). Effective MTR's for State and local income taxes for each income decile are estimated by multiplying the decile's Federal rate by the ratio of State and local income tax receipts to Federal income tax receipts. Adjustments are made for different tax rates on several financial assets: The Federal MTR on the yield on corporate equities is assumed to be the average rate paid on capital gains

**Table 9.—Service Value of Consumer Durables, by Component, 1947–77**

[Billions of dollars]

| Year | Service value | Net return | Depreciation | Repairs and maintenance | Personal property taxes |
|---|---|---|---|---|---|
| 1947 | 20.9 | 5.7 | 11.6 | 2.4 | 0.2 |
| 1948 | 23.3 | 6.4 | 13.0 | 2.6 | .2 |
| 1949 | 25.8 | 7.7 | 14.2 | 2.7 | .2 |
| 1950 | 31.0 | 10.7 | 15.6 | 4.2 | .2 |
| 1951 | 37.4 | 14.1 | 18.3 | 4.6 | .2 |
| 1952 | 41.6 | 15.7 | 20.7 | 4.6 | .3 |
| 1953 | 44.8 | 16.4 | 23.1 | 5.0 | .3 |
| 1954 | 49.0 | 18.7 | 24.9 | 5.1 | .3 |
| 1955 | 52.3 | 19.7 | 26.7 | 5.6 | .3 |
| 1956 | 57.4 | 21.4 | 29.2 | 6.1 | .3 |
| 1957 | 61.6 | 22.2 | 31.2 | 6.7 | .3 |
| 1958 | 65.5 | 24.7 | 33.5 | 7.0 | .3 |
| 1959 | 68.4 | 25.1 | 35.5 | 7.7 | .5 |
| 1960 | 70.0 | 24.8 | 36.5 | 8.1 | .5 |
| 1961 | 72.6 | 25.0 | 37.5 | 8.6 | .5 |
| 1962 | 72.3 | 24.0 | 38.5 | 9.1 | .5 |
| 1963 | 73.9 | 25.9 | 39.6 | 9.7 | .7 |
| 1964 | 76.0 | 25.8 | 41.2 | 10.3 | .7 |
| 1965 | 80.7 | 28.6 | 42.5 | 10.9 | .7 |
| 1966 | 84.9 | 27.6 | 44.9 | 11.7 | .7 |
| 1967 | 89.7 | 31.8 | 45.7 | 12.5 | .7 |
| 1968 | 102.2 | 33.9 | 52.7 | 12.8 | .8 |
| 1969 | 111.5 | 35.1 | 59.2 | 16.2 | .9 |
| 1970 | 121.2 | 38.7 | 64.7 | 16.8 | 1.0 |
| 1971 | 128.8 | 40.3 | 70.9 | 16.4 | 1.0 |
| 1972 | 142.6 | 44.9 | 76.1 | 20.6 | 1.1 |
| 1973 | 152.6 | 45.3 | 82.6 | 23.9 | 1.2 |
| 1974 | 167.8 | 47.9 | 93.3 | 25.4 | 1.2 |
| 1975 | 192.6 | 55.4 | 109.0 | 28.0 | 1.4 |
| 1976 | 207.6 | 56.7 | 116.8 | 32.5 | 1.6 |
| 1977 | 224.1 | 60.0 | 128.0 | 34.4 | 1.7 |

NOTE.—Estimates are based on after-tax rates of return and current-cost valuation (given-year prices and rates, and current-cost depreciation).

**Table 10.—Service Value of Consumer Durables, by Type, 1947–77**

[Billions of dollars]

| Year | Autos[1] | | | | Other motor vehicles[1] | | | | Furniture and household equipment[2] | | | | Other[3] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Service value | Net return | Depreciation | Repairs, maintenance, and personal property taxes | Service value | Net return | Depreciation | Repairs, maintenance, and personal property taxes | Service value | Net return | Depreciation | Repairs, maintenance, and personal property taxes | Service value | Net return | Depreciation | Repairs, maintenance, and personal property taxes |
| 1947 | 8.4 | 2.9 | 2.8 | 2.7 | 0.6 | 0.1 | 0.2 | 0.4 | 10.4 | 3.7 | 6.4 | 0.3 | 3.5 | 1.1 | 2.2 | 0.1 |
| 1948 | 7.1 | 1.1 | 3.1 | 2.9 | .7 | .1 | .2 | .4 | 11.7 | 4.0 | 7.2 | .4 | 3.8 | 1.2 | 2.4 | .1 |
| 1949 | 8.0 | 1.5 | 3.5 | 3.0 | .8 | .1 | .3 | .4 | 12.9 | 4.6 | 7.8 | .4 | 4.1 | 1.4 | 2.6 | .1 |
| 1950 | 10.1 | 2.6 | 4.1 | 3.3 | 1.0 | .2 | .4 | .5 | 15.2 | 6.2 | 8.6 | .5 | 4.8 | 1.7 | 2.7 | .1 |
| 1951 | 12.5 | 4.0 | 5.0 | 3.6 | 1.1 | .2 | .4 | .5 | 16.6 | 7.9 | 10.1 | .6 | 6.2 | 2.1 | 3.1 | .1 |
| 1952 | 14.9 | 4.3 | 6.4 | 4.7 | 1.3 | .3 | .5 | .5 | 19.7 | 9.5 | 10.6 | .7 | 5.8 | 2.2 | 3.2 | .2 |
| 1953 | 16.9 | 5.2 | 7.5 | 4.9 | 1.4 | .3 | .6 | .5 | 20.7 | 9.7 | 11.3 | .7 | 5.8 | 2.3 | 3.4 | .2 |
| 1954 | 19.1 | 6.2 | 9.1 | 3.9 | 1.4 | .3 | .6 | .5 | 22.3 | 9.7 | 11.8 | .8 | 6.2 | 2.5 | 3.5 | .2 |
| 1955 | 21.0 | 6.8 | 10.3 | 4.2 | 1.4 | .3 | .5 | .6 | 23.4 | 10.2 | 12.3 | .9 | 6.4 | 2.5 | 3.6 | .3 |
| 1956 | 23.5 | 7.2 | 11.7 | 4.6 | 1.5 | .3 | .6 | .6 | 25.0 | 11.0 | 13.1 | .9 | 6.9 | 2.8 | 3.9 | .3 |
| 1957 | 25.7 | 7.7 | 13.0 | 5.0 | 1.7 | .3 | .7 | .7 | 26.3 | 11.2 | 14.0 | 1.0 | 7.3 | 2.9 | 4.1 | .2 |
| 1958 | 27.8 | 8.7 | 12.9 | 5.2 | 1.8 | .4 | .7 | .7 | 28.0 | 12.4 | 14.3 | 1.1 | 7.9 | 3.3 | 4.4 | .2 |
| 1959 | 29.3 | 8.8 | 15.0 | 5.9 | 1.9 | .4 | .7 | .8 | 28.7 | 12.5 | 15.1 | 1.1 | 8.3 | 3.4 | 4.7 | .3 |
| 1960 | 30.0 | 8.5 | 15.2 | 6.3 | 1.9 | .4 | .7 | .9 | 29.4 | 12.5 | 15.8 | 1.2 | 8.7 | 3.5 | 4.9 | .3 |
| 1961 | 32.8 | 8.6 | 15.6 | 6.6 | 2.0 | .4 | .7 | .9 | 29.8 | 12.5 | 16.0 | 1.3 | 9.0 | 3.5 | 5.2 | .3 |
| 1962 | 31.5 | 8.2 | 16.0 | 7.1 | 2.0 | .3 | .7 | 1.0 | 29.7 | 12.0 | 16.2 | 1.4 | 9.2 | 3.5 | 5.4 | .3 |
| 1963 | 32.8 | 8.8 | 16.4 | 7.8 | 2.2 | .4 | .8 | 1.0 | 31.2 | 12.9 | 16.8 | 1.4 | 9.8 | 3.8 | 5.7 | .3 |
| 1964 | 33.6 | 8.7 | 16.9 | 8.0 | 2.3 | .4 | .8 | 1.1 | 33.3 | 13.8 | 17.6 | 1.5 | 10.3 | 3.9 | 6.1 | .3 |
| 1965 | 34.5 | 9.0 | 17.1 | 8.4 | 2.5 | .4 | .8 | 1.2 | 33.9 | 13.2 | 18.2 | 1.6 | 10.7 | 4.0 | 6.4 | .4 |
| 1966 | 36.1 | 8.3 | 17.8 | 9.0 | 2.7 | .5 | 1.0 | 1.2 | 34.7 | 12.7 | 19.3 | 1.7 | 11.4 | 4.1 | 6.8 | .4 |
| 1967 | 38.5 | 10.8 | 19.1 | 9.6 | 3.1 | .6 | 1.2 | 1.2 | 36.4 | 15.6 | 21.0 | 1.8 | 12.7 | 4.8 | 7.4 | .5 |
| 1968 | 43.1 | 11.5 | 21.0 | 10.6 | 3.5 | .7 | 1.4 | 1.4 | 41.6 | 16.5 | 23.1 | 2.0 | 14.0 | 5.2 | 8.3 | .6 |
| 1969 | 46.9 | 12.1 | 23.0 | 11.8 | 4.1 | .8 | 1.7 | 1.6 | 45.1 | 17.6 | 25.4 | 2.1 | 15.5 | 5.6 | 9.2 | .6 |
| 1970 | 51.4 | 12.5 | 25.1 | 13.1 | 4.8 | 1.0 | 2.0 | 1.8 | 48.4 | 19.5 | 27.5 | 2.1 | 16.7 | 6.0 | 10.1 | .7 |
| 1971 | 55.8 | 13.6 | 27.5 | 14.4 | 5.5 | 1.1 | 2.4 | 2.0 | 51.5 | 19.4 | 29.3 | 2.3 | 18.0 | 6.3 | 11.1 | .7 |
| 1972 | 59.8 | 14.4 | 29.2 | 15.2 | 6.4 | 1.4 | 2.6 | 2.2 | 56.0 | 21.4 | 31.2 | 2.5 | 19.8 | 7.0 | 11.9 | .8 |
| 1973 | 63.4 | 14.5 | 30.9 | 15.0 | 7.4 | 1.6 | 3.4 | 2.6 | 59.3 | 21.9 | 34.2 | 2.7 | 21.3 | 7.2 | 13.1 | 1.0 |
| 1974 | 69.4 | 15.1 | 34.2 | 20.1 | 8.6 | 1.8 | 4.1 | 2.7 | 66.3 | 23.3 | 40.3 | 2.7 | 23.4 | 7.6 | 14.5 | 1.0 |
| 1975 | 78.6 | 17.4 | 38.2 | 22.9 | 10.2 | 2.2 | 4.9 | 3.2 | 76.9 | 27.3 | 46.2 | 2.9 | 27.0 | 9.0 | 15.8 | 1.1 |
| 1976 | 85.7 | 17.7 | 42.1 | 25.9 | 11.8 | 2.3 | 5.7 | 3.5 | 81.6 | 27.6 | 50.6 | 3.3 | 28.7 | 9.0 | 15.4 | 1.3 |
| 1977 | 94.3 | 19.0 | 46.2 | 29.0 | 13.5 | 2.7 | 6.9 | 4.0 | 87.4 | 28.2 | 54.9 | 3.7 | 30.9 | 9.5 | 28.0 | 1.4 |

1. Includes tires, tubes, accessories, and other parts.
2. Consists of furniture, including mattresses and bedsprings; kitchen and other household appliances; china, glassware, tableware, and utensils; other durable house furnishings; and radio and television receivers, records, and musical instruments.
3. Consists of jewelry and watches; ophthalmic products and orthopedic appliances; books and maps; and wheel goods, durable toys, sports equipment, boats, and pleasure aircraft.

NOTE.—Based on after-tax rates of return and current-cost valuation (given-year prices and rates, and current-cost depreciation).

**Table 11.—Constant-Dollar Service Value of Consumer Durables, by Type, 1947–77**

[Billions of 1972 dollars]

| Year | Total | Autos [1] | Other motor vehicles [1] | Furniture and household equipment [1] | Other [2] |
|---|---|---|---|---|---|
| 1947 | 36.8 | 13.8 | 0.6 | 17.1 | 5.3 |
| 1948 | 39.8 | 15.2 | .7 | 18.2 | 5.7 |
| 1949 | 42.1 | 16.9 | .9 | 18.2 | 6.1 |
| 1950 | 45.5 | 18.6 | 1.0 | 20.4 | 6.5 |
| 1951 | 48.7 | 20.1 | 1.2 | 21.6 | 6.8 |
| 1952 | 52.5 | 21.2 | 1.3 | 22.8 | 7.2 |
| 1953 | 55.4 | 22.4 | 1.5 | 24.0 | 7.5 |
| 1954 | 58.2 | 23.7 | 1.5 | 25.1 | 7.9 |
| 1955 | 61.6 | 25.3 | 1.8 | 26.3 | 8.2 |
| 1956 | 65.5 | 27.5 | 1.7 | 27.5 | 8.7 |
| 1957 | 69.1 | 29.5 | 1.8 | 28.7 | 9.1 |
| 1958 | 72.3 | 31.2 | 1.8 | 29.8 | 9.5 |
| 1959 | 76.2 | 32.9 | 1.8 | 30.8 | 10.6 |
| 1960 | 78.1 | 34.1 | 1.8 | 31.7 | 10.4 |
| 1961 | 80.8 | 35.3 | 1.9 | 32.6 | 10.8 |
| 1962 | 83.2 | 36.6 | 1.9 | 33.5 | 11.1 |
| 1963 | 86.4 | 38.2 | 2.0 | 34.6 | 11.6 |
| 1964 | 90.0 | 39.9 | 2.1 | 35.9 | 12.0 |
| 1965 | 94.3 | 41.8 | 2.3 | 37.5 | 12.8 |
| 1966 | 99.6 | 43.9 | 2.8 | 39.5 | 13.4 |
| 1967 | 104.9 | 46.8 | 3.0 | 41.8 | 14.4 |
| 1968 | 111.4 | 48.2 | 3.4 | 44.3 | 15.4 |
| 1969 | 118.7 | 51.2 | 4.0 | 47.0 | 16.5 |
| 1970 | 125.6 | 53.4 | 4.6 | 49.3 | 17.8 |
| 1971 | 133.0 | 56.3 | 5.3 | 52.7 | 18.7 |
| 1972 | 142.0 | 59.6 | 6.4 | 56.0 | 19.8 |
| 1973 | 152.6 | 63.8 | 7.7 | 59.9 | 21.1 |
| 1974 | 163.8 | 67.5 | 8.9 | 63.9 | 22.5 |
| 1975 | 171.8 | 70.6 | 9.8 | 67.7 | 23.6 |
| 1976 | 183.6 | 74.1 | 10.9 | 71.4 | 25.1 |
| 1977 | 192.7 | 78.4 | 13.4 | 75.4 | 26.5 |

1. See footnote 1, table 10.
2. See footnote 2, table 10.
3. See footnote 3, table 10.

realized in that year, interest on Federal obligations is assumed to be exempt from taxation by States and localities, and interest on State and local obligations is assumed to be tax exempt. The results are shown in table 3. The after-tax rate equals (1–MTR) multiplied by the before-tax rate on financial assets. For the rate of return on debt, the after-tax rate is estimated in a similar manner, except that the average effective MTR for the Federal income tax is estimated by weighting the effective MTR in each income decile by an estimate of the proportion of consumer durables (autos and other durables) owned by borrowers in that decile who itemize their deductions. The weights are based on data from the Survey of Consumer Finance by the University of Michigan's Survey Research Center, the Consumer Credit Survey by the Federal Reserve Board, and the Internal Revenue Service *Statistics of Income*.

Estimates of service value in constant (1972) dollars are obtained by extrapolating current-dollar service value in 1972 by constant-dollar gross stocks. This methodology has three major shortcomings. First, it implies a generally fixed real rate of return when in actuality the real rate may vary. The nominal rate has declined over recent decades, as will be shown later, and the rate of inflation has increased during most of the period, suggesting a decline in the real rate of return. Second, in view of the substantial year-to-year variability shown by the rate of return, the base-year rate may be atypical. Third, for a single durable, extrapolation by gross stocks implies an undiminished stream of services over its entire service life (although estimates of services for a type of durable do decline over time because the stock estimates assume a distribution of discards around the average service life).

**Table 12.—Service Value and Net Return of Consumer Durables Based on Before-Tax Forgone Rates of Return, 1947–77**

[Billions of dollars]

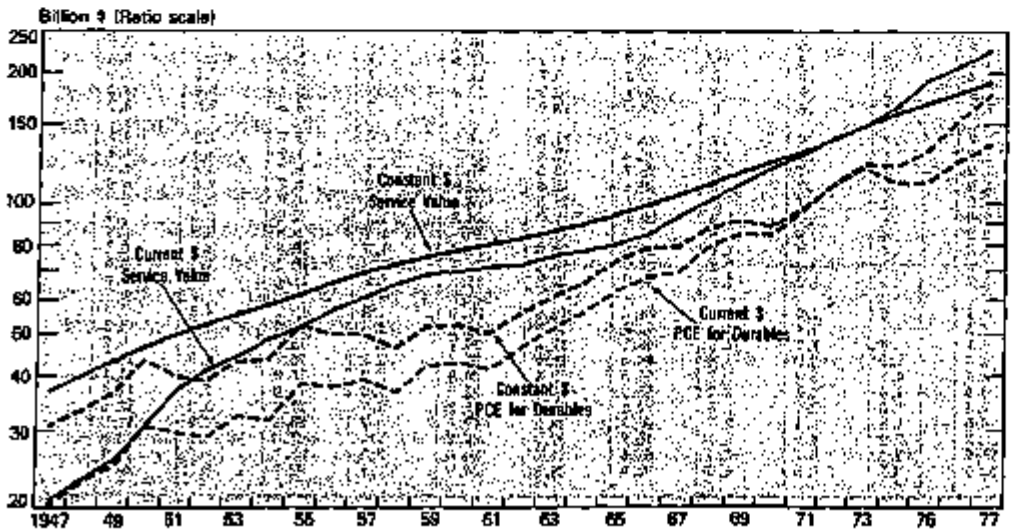
| Year | Service value [1] | Net return |
|---|---|---|
| 1947 | 21.2 | 6.1 |
| 1948 | 23.6 | 6.8 |
| 1949 | 25.2 | 6.3 |
| 1950 | 31.7 | 11.5 |
| 1951 | 38.5 | 15.2 |
| 1952 | 42.9 | 17.1 |
| 1953 | 46.3 | 17.9 |
| 1954 | 50.8 | 20.5 |
| 1955 | 54.4 | 21.8 |
| 1956 | 59.3 | 23.7 |
| 1957 | 63.3 | 24.8 |
| 1958 | 68.5 | 27.7 |
| 1959 | 72.1 | 28.4 |
| 1960 | 72.2 | 28.0 |
| 1961 | 76.2 | 28.6 |
| 1962 | 78.0 | 27.7 |
| 1963 | 79.8 | 28.6 |
| 1964 | 81.9 | 29.7 |
| 1965 | 84.7 | 30.6 |
| 1966 | 89.0 | 31.6 |
| 1967 | 96.5 | 38.0 |
| 1968 | 107.0 | 39.1 |
| 1969 | 117.0 | 41.6 |
| 1970 | 127.2 | 44.7 |
| 1971 | 137.1 | 46.6 |
| 1972 | 148.0 | 51.1 |
| 1973 | 159.4 | 53.7 |
| 1974 | 176.1 | 58.2 |
| 1975 | 203.4 | 66.3 |
| 1976 | 217.9 | 67.0 |
| 1977 | 267.1 | 71.1 |

1. Depreciation, repairs and maintenance, and personal property tax components are as shown in table 9.

NOTE.—Based on current-cost valuation (given-year prices and rates, and current-cost depreciation).

CHART 7

**Service Value of Consumer Durables and Personal Consumption Expenditures for Durables, 1947-77**

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## Service Value, 1947–77

The value of the services of consumer durables based on after-tax rates of return on forgone opportunities was $226.1 billion in 1977. From 1947 to 1977, it increased at an average annual rate of 8.3 percent (table 4). Over the same period, constant-dollar service value increased at an average annual rate of 5.7 percent. In both current- and constant-dollars, the increase was above average in 1947–58, below average in 1958–66, and again above average in 1966–77. Because—as noted earlier—observable prices and physical units do not underlie the service value, the difference between the current- and constant-dollar increases should not be

interpreted as measuring changes in the prices of the services.[9]

As shown in chart 7, service values increased more smoothly over time than did purchases of durables. Purchases tended to increase in business cycle expansions and fall in contractions, but service values did not because they are essentially a function of stocks, which change only gradually because any one year's purchase is small relative to the stock total.

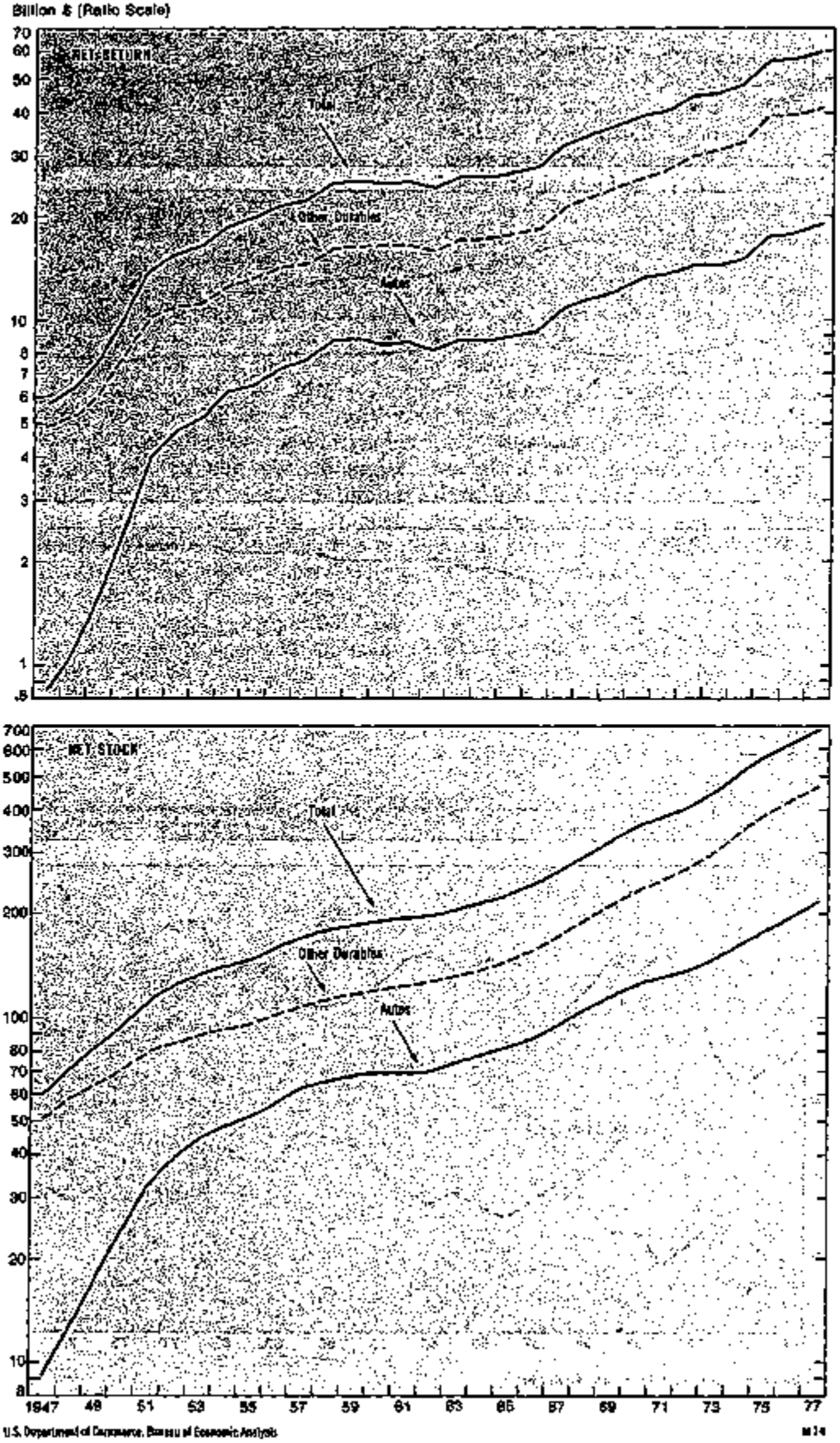
*Service value by component*

The four components of current-dollar service value for selected years are shown in table 5, which also shows average annual percent changes and percent distributions. In both 1947 and 1977, depreciation accounted for about 56 percent of the total service value, the net return for about 27 percent, and repairs and maintenance for about 16 percent. This stability is reflected in the fact that all components increased at the same average annual rate—about 8 percent—from 1947 to 1977. In contrast, each component's rate of increase varied substantially over the subperiods shown in the table. The variability was largest in the net return component. As can be seen from chart 8, the net return showed considerable variability from year to year as well. This variability, which reflects movements in market interest rates and revaluations of corporate stocks, may overstate the variability in the true net return on consumer durables.

The net return increased sharply in 1947–58, decelerated in 1958–66, and accelerated thereafter. This pattern can be interpreted by reference to the net stock, which is shown in the lower panel of chart 8, and to the rates of return, which are shown in chart 9. The sharp increase in the first period occurred because both factors under-

CHART 8

Consumer Durables: Net Return and Net Stock, 1947-77

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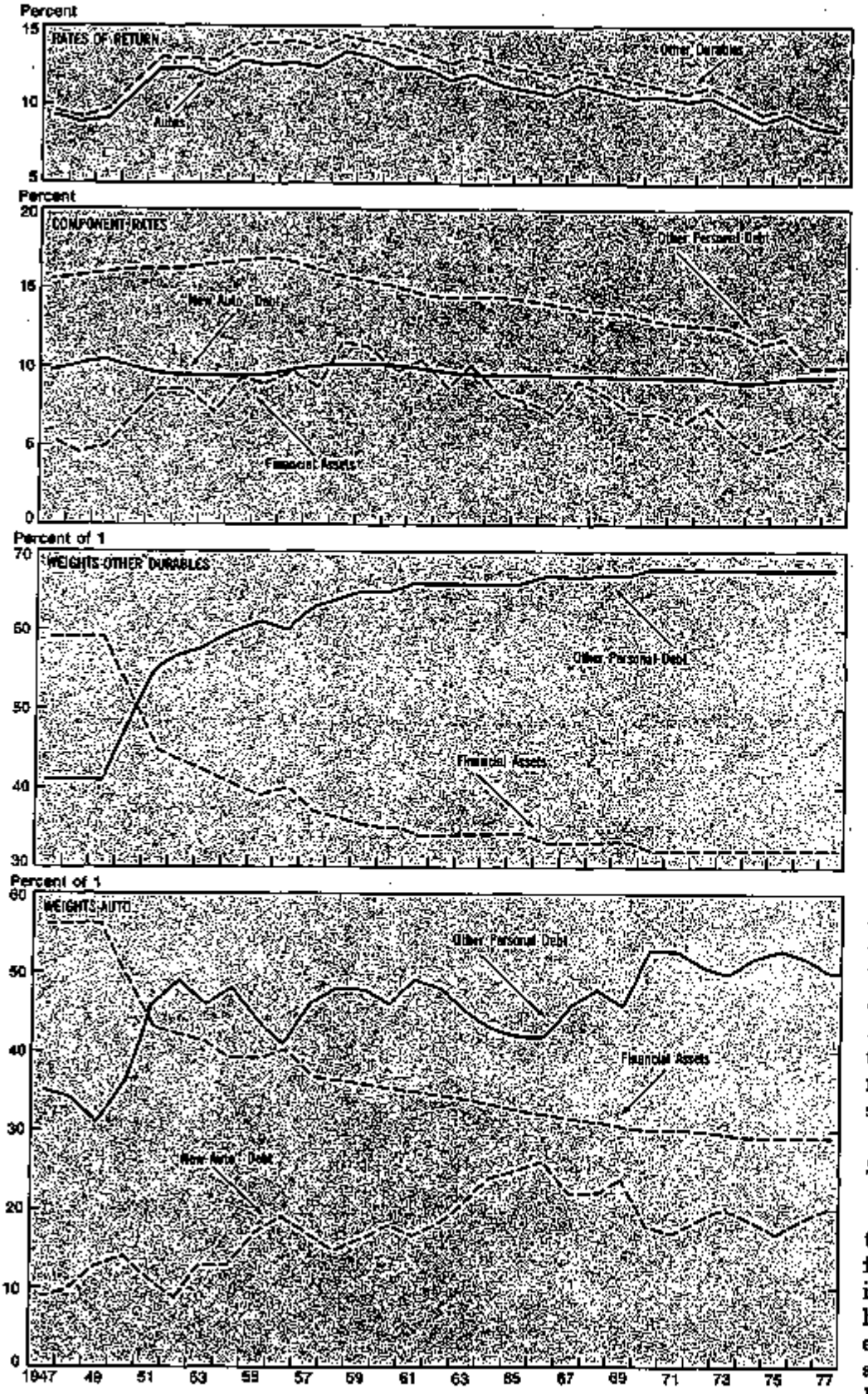
9. Because there are unsolved conceptual problems, the current-dollar estimates and constant-dollar estimates would not be the same even in the absence of price change. This statement can be explained best by envisaging, in the absence of price change, the flow of service values of a single durable over its service life. The service value derived using the methodology underlying the constant-dollar estimates will be an undiminished amount each year until the durable is discarded. Only the depreciation component of current-dollar service value will display this pattern. The net return component, which reflects the net stock of the durable, will decline as the durable ages. Further, changes in income tax rates will be reflected in the net return component of current-dollar service value but not in constant-dollar service value.

CHART 9

Rates of Return, and Component Rates and Weights, 1947-77




Note.—Rates of return and component rates are after tax.

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lying it—net stock and rates of return—increased. Rates of return peaked in 1958 and declined thereafter. The net stock continued to increase, although at a slower rate in 1958–66 than in 1966–77.

The course of the rates of return reflected, in turn, changes in the component rates—on "new auto" debt, on other personal debt, and on financial assets—and changes in the weights applied to them. Rates on "new auto" debt were relatively stable over 1947–77, at about 10 percent. The rate on other personal debt increased from about 15½ percent in 1947 to 17 percent in 1955, and fell thereafter toward 10 percent in 1977 as the share of loans made by finance companies, whose rates are relatively high, declined. Despite its decline, the rate on other personal debt remained the highest among the component rates. The rate on financial assets—largely determined by the rate on corporate equity (dividends plus net capital gains)—was quite variable from year to year; it moved toward a peak of 11½ percent in 1958 and then dropped back to 5 percent by 1977.

The major changes in the weights were from financial assets toward debt, both "new auto" and other personal debt. The sharpest changes occurred in 1947–58. For autos, the rate of return increased in 1947–58 because the rate on financial assets increased and the weights shifted toward the debt rates. Thereafter, the rate of return declined because the decline in the rates on both other personal debt and on financial assets more than offset the shift toward the debt rates. The explanation for the rate of return on other durables is similar.

### *Service value by type of durable*

Table 6 shows the percent distribution of service value by type of durable for selected years. Current-dollar service values of autos and of furniture and household equipment were of about equal size in 1977; and accounted for about 80 percent of the total. Since 1947, the share of autos increased from 30.6 percent to 41.7 percent; the increase had taken place by 1958. The

Table 13.—Service Value of Consumer Durables, by Type, Based on Historical-Cost Valuation,[1] 1957–77

[Billions of dollars]

| Year | Furniture and household equipment [2] | | | Other consumer durables [3] | | |
|---|---|---|---|---|---|---|
| | Service value [4] | Net return | Depreciation | Service value [4] | Net return | Depreciation |
| 1957 | 34.5 | 10.4 | 13.2 | 6.9 | 2.7 | 4.0 |
| 1958 | 35.8 | 11.0 | 12.8 | 7.4 | 2.9 | 4.3 |
| 1959 | 37.2 | 11.6 | 14.4 | 7.9 | 3.2 | 4.5 |
| 1960 | 38.3 | 12.1 | 14.0 | 8.3 | 3.4 | 4.7 |
| 1961 | 39.3 | 12.4 | 14.3 | 8.7 | 3.5 | 4.9 |
| 1962 | 40.1 | 12.7 | 14.1 | 9.0 | 3.6 | 5.1 |
| 1963 | 41.1 | 13.1 | 14.6 | 9.4 | 3.7 | 5.4 |
| 1964 | 42.4 | 13.6 | 17.4 | 9.9 | 3.8 | 5.7 |
| 1965 | 44.0 | 14.1 | 18.3 | 10.6 | 4.1 | 6.1 |
| 1966 | 46.0 | 14.8 | 19.4 | 11.4 | 4.4 | 6.6 |
| 1967 | 46.3 | 15.1 | 20.8 | 12.4 | 4.7 | 7.1 |
| 1968 | 47.0 | 14.7 | 22.3 | 13.5 | 5.1 | 7.8 |
| 1969 | 48.9 | 17.8 | 24.0 | 14.7 | 5.6 | 8.5 |
| 1970 | 48.5 | 18.3 | 25.9 | 15.8 | 5.9 | 9.2 |
| 1971 | 49.2 | 19.3 | 27.3 | 17.0 | 6.3 | 10.3 |
| 1972 | 54.5 | 21.0 | 30.1 | 18.3 | 6.7 | 10.8 |
| 1973 | 57.3 | 22.4 | 32.8 | 19.9 | 7.2 | 11.8 |
| 1974 | 62.2 | 25.7 | 33.8 | 21.5 | 7.6 | 12.9 |
| 1975 | 68.9 | 26.0 | 39.0 | 23.3 | 8.3 | 14.1 |
| 1976 | 72.1 | 29.4 | 42.4 | 25.3 | 9.0 | 15.4 |
| 1977 | 77.7 | 32.7 | 46.3 | 27.4 | 9.1 | 16.9 |

1. Purchase-year prices and rates, and historical-cost depreciation.
2. See footnote 2, table 10.
3. See footnote 3, table 10.
4. Repairs and maintenance, and personal property tax components are as shown in table 10.

NOTE.—Estimates are based on after-tax rates of return.

share of furniture and household equipment declined from 50 percent in 1947 to 38.6 percent. Although most of the decline had taken place by 1958, it continued through 1977. In the latter part of the period, the decline was offset by increases in the shares of other durables and other motor vehicles. The distribution of constant-dollar service value was similar except in 1947. In that year, autos accounted for a much larger share of the total than in current dollars, and all other categories for smaller shares.

### *Supplementary estimates*

*Before-tax rates of return.*—Table 7 shows for selected years the service value and net return based on before- and after-tax forgone rates of return. The difference between the before- and after-tax rates of return was 0.6 percentage points in 1947 and widened to 2 percentage points in 1977. This widening reflected increases in effective marginal income tax rates and increases through 1966 in the percentage of Federal income tax returns in which interest paid was deductible. Although there have been a number of cuts in tax rates during this period, increases in nominal incomes, coupled with a progressive rate structure, have resulted in the increased effective income tax rates. In terms of service value and net return, the difference between before- and after-tax rates of return amounted to $11 billion in 1977.

*Historical-cost valuation.*—Service value, net return, and depreciation for furniture and household equipment and for other consumer durables based on historical-cost and current-cost valuation are shown in table 8 for selected years. The two methods of valuation produce substantially different estimates of service value and depreciation beginning in the late 1960's. For furniture and household equipment the service value in 1977 was $9.7 billion, or 12.5 percent, higher based on current-cost valuation than on historical-cost valuation; depreciation was $8.6 billion higher. Service value for other consumer durables was $3.5 billion, or 12.8 percent, higher and depreciation was $3.2 billion higher. The higher service value and depreciation under current-cost valuation reflect increases in the price of durables. The net return was slightly higher based on current-cost valuation during much of the period as the effect of a higher net stock was largely offset by lower rates of return. However, during some earlier periods—especially 1962–71—the net return in historical costs exceeded that in current costs. Also, in the last few years, the excess of the net return in current costs over that in historical costs widened.